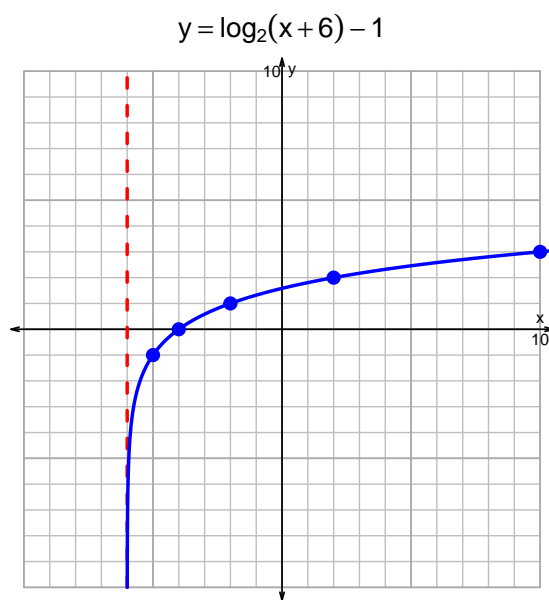
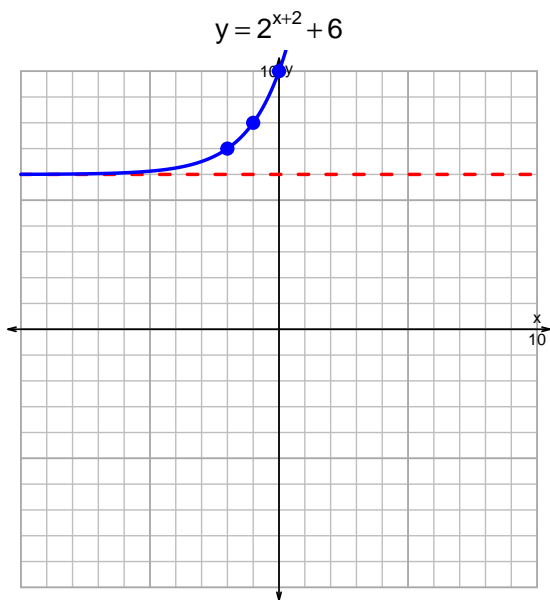


Name: \_\_\_\_\_

Date: \_\_\_\_\_

## s18: EXP LOG (SLTN v307)

1. (10 pts) Graph  $y = 2^{x+2} + 6$  and  $y = \log_2(x+6) - 1$  on the grids below. Also, draw any asymptotes with dashed lines.



*Somewhat useful hint:  $2^3 = 8$ , and thus  $\log_2(8) = 3$ .*

2. (10 pts) Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression. Please do not do any arithmetic; just move numbers around.

$$-29 = \left(\frac{-7}{3}\right) \cdot 2^{-5t/4}$$

Divide both sides by  $\frac{-7}{3}$ .

$$\frac{29 \cdot 3}{7} = 2^{-5t/4}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{29 \cdot 3}{7}\right) = \frac{-5t}{4}$$

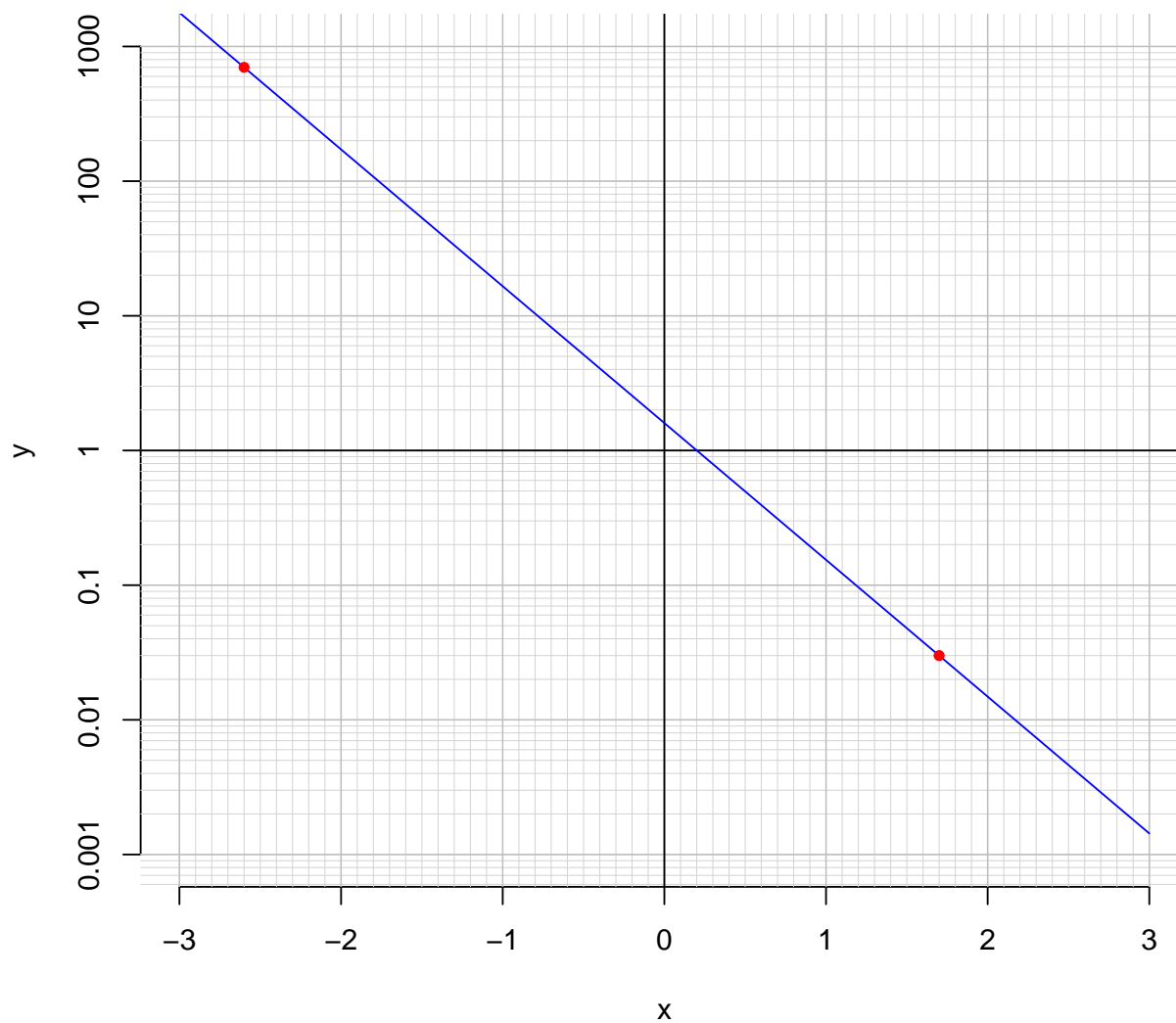
Divide both sides by  $\frac{-5}{4}$ .

$$\frac{-4}{5} \cdot \log_2\left(\frac{29 \cdot 3}{7}\right) = t$$

Switch sides.

$$t = \frac{-4}{5} \cdot \log_2\left(\frac{29 \cdot 3}{7}\right)$$

3. (10 pts) An exponential function  $f(x) = 1.6 \cdot e^{-2.34x}$  is graphed below on a semi-log plot.



- a. Using the plot above, evaluate  $f(1.7)$ .

$$f(1.7) = 0.03$$

- b. The inverse function is logarithmic.

$$f^{-1}(x) = \frac{-1}{2.34} \cdot \ln\left(\frac{x}{1.6}\right)$$

Using the plot above, evaluate  $f^{-1}(700)$ .

$$f^{-1}(700) = -2.6$$